bus and a standard communication protocol layer (e.g., the audio visual control [AV/C] protocol). The IEEE 1394 standard is an international standard for implementing an inexpensive high-speed serial bus architecture which supports both asynchronous and isochronous format data transfers. The IEEE 1394 standard provides a high-speed serial bus for interconnecting digital devices, thereby providing universal input/output connection. The IEEE 1394 standard defines a digital interface for applications, thereby eliminating the need for an application to convert digital data to an analog form before it is transmitted across the bus. Correspondingly, a receiving application will receive digital data, not analog data, from the bus and will therefore not be required to convert analog data to digital form. The IEEE 1394 standard is ideal for consumer electronics communication in part because devices can be added to or removed from the serial bus while the bus is active.

In a digital home network, the underlying structure of the AV network consists of a set of interconnected consumer electronic devices ("target devices") providing services to a single user or to multiple simultaneous users. A central component (e.g., a "controller") can provide users with overall control and coordination of the network, although typically there is more than one controller/user interface for receiving user input and providing commands to the devices on the network.

The controller can be, for example, an intelligent device such as set-top box or a personal computer system. The controller can also be any one of the target devices with enough built-in intelligence for controlling the other devices in response to user input. Thus, for example, a TV can be used to control a VCR, or a set-top box can be used to control both the TV and the VCR. Similar to the analog system, a user controls the target devices by manipulating buttons and switches on the controller device or, alternatively, by manipulating buttons on a hand-held remote.

While there is some similarity in the way that analog and digital home networks are controlled, there are also several significant differences. Foremost, of course, is that the former uses analog signals for control, usually delivered via an infrared signal, while the latter uses digital signals that can be delivered using other means such as an IEEE 1394 cable. In addition, the commands and controls that can be asserted in an analog system are relatively limited in comparison to a digital system. For example, in the digital network, the controller can provide an on-screen display (e.g., a menu) of the various target devices connected to the network. The user can choose to connect with the various target devices by scrolling through the menu and making a selection. The user can also control the subunits that make up a target device. In general, the controller in a digital network provides the user with more options and a greater degree of control over the various devices in the network.

While a digital home network offers a number of advantages, there are also disadvantages associated with digital home networks. One disadvantage is associated with the complexity of the process used by the controller to connect with the various target devices. The target devices are versatile and typically multi-functional, and thus they may support many different types of connections within the home network. For example, AV/C devices (e.g., AV/C units) compliant with IEEE 1394 may have up to 31 external input plugs, 31 external output plugs, 31 serial bus input plugs, 31 serial bus output plugs, 31 subunit source plugs, 31 subunit destination plugs, 31 asynchronous input plugs, and 31 asynchronous output plugs. Moreover, there can be up to 32 different types of AV/C subunits in each AV/C unit, and five instances of each type, further increasing the number of possible connections. Thus, the controller must be configured to handle a large number of different connections.

In addition, the AV/C connection process itself can also be cumbersome and complex. Prior Art Figure 1 shows the typical steps in a process 10 for connecting a target device to an IEEE 1394 home network and for establishing an active communication path between the target device and other devices on the network. (Note that the target device can be physically connected to the serial bus, but not connected with -- in active communication with -- the network or devices on the network.)